**EQE Standard Operating Procedure**

**Hardware instructions:**

* Turn lamp on- wait 10-15 min to stabilize

A person's hand in a black glove pointing at a white device

Description automatically generated

* Put 50 ohm shunt resistor for input signal into lock-in amplifier
* A close up of a device

  Description automatically generated
* Turn optical chopper on, turn frequency to 591 Hz for perovskites

A person using a device

Description automatically generated

* Place calibrated photodiode underneath beam of light

A person holding a black cable

Description automatically generated with medium confidence

**Software instructions:**

**Type the following into the command prompt/terminal:**

ipython

from frgtools.eqe import EQE

cd/into/a/folder

c = EQE()

**# follow the instructions present in the terminal**

* Start wavelength = 300
* Stop wavelength = 900
* Interval = 5
* Turn all lights off including display of chopper
* Perform the lightsorce correction

**Contact your cell and align a pixel underneath the beam of light:**  
A close up of a machine

Description automatically generated

**To take EQE measurement:**

**Type the following into the command prompt/terminal:**

c.take\_EQE(sample\_name = ‘sample\_name’, n\_avg = 10, time\_constant = 0.03)

**To take EQE of a tandem cell:**

#perovskite top cell

c = EQE()

Calibrate silicon diode for wavelength range 300-1100

Take EQE for the top cell:

c.take\_EQE(‘top\_cell\_1’, 10, 0.03)

#Silicon bottom cell

Restart terminal

Calibrate germanium for wavelength range 700-1200

Take EQE for the bottom cell:

c.take\_EQE(‘bottom\_cell\_1’, 10, 0.03)